

NAME 

DATE

4/14/94

EMBRYOLOGY MID-TERM EXAMINATION - 1994

SELECT THE SINGLE BEST ANSWER

QUESTIONS 1 TO 7

- A. 2N (N = Amount of DNA in a gamete)
- B. 2C (C = Amount of unique genetic information in a game)
- C. Both A and B are correct
- D. Neither A nor B is correct

- C 1. Normal somatic cell C ✓ 2N, 2C
 - B 2. Ovarian reproductive cells at birth B ✓ 4N, 2C
 - D 3. Reproductive cell found in duct of epididymis D ✓ 1N, 1C
 - A 4. Reproductive cell ovulated from ovary A ✓ 2N, 2C
 - D 5. Spermatid D ✓ 1N, 1C
 - C 6. Testicular reproductive cells at birth C ✓ 2N, 2C
 - A 7. Secondary oocyte A ✓ 2N, 1C
- Handwritten notes: germ cells 2N, 2C → Meiosis → 2N, 2C → DNA replication → 4N, 2C → Meiosis I → 2N, 1C → Meiosis II → mature 1N, 1C spermato

QUESTIONS 8 TO 13

- A. Trophoblast
- B. Embryoblast
- C. Both A and B are correct
- D. Neither A nor B is correct

- C 8. According to book, origin of cells that normally come into contact with amniotic fluid
 - D 9. Contains cells of uterine endometrial origin D
 - A 10. Forms tissues that produce human chorionic gonadotrophin A ✓
 - C 11. Forms blood vessels containing fetal blood C ✓
 - D 12. Genetically equivalent to mother D
 - D 13. Usually has two X chromosomes in related nuclei D
- Handwritten notes: extraembryonic mesoderm = from cytotrophoblast

EMBRYOLOGY
SECOND INTERIM EXAMINATION
27 OCTOBER 1997

NUMBER OF QUESTIONS 72

NAME [REDACTED]

1. Meroanencephaly (anencephaly) is usually associated with
- ☒ A. high levels of alpha-fetoprotein in amniotic fluid.
 - ☒ B. failure of the anterior neuropore to close
 - ☒ C. failure of development of calvarium
 - ☐ D. A and B are correct
 - ☒ E. A, B, and C are correct
2. Internal hydrocephalus is often associated with
- ☒ A. excessive development of the choroid plexus within the central canal (ventricular system) related to the medulla and pons.
 - ☒ B. blockage of the central canal (ventricular system) in the mesencephalon.
 - ☐ C. blockage of absorption of cerebrospinal fluid at the arachnoid villi.
 - ☐ D. A and B are correct
 - ☐ E. A, B, and C are correct
3. The membranous labyrinth of the ear is
- ☐ A. a portion of the middle ear.
 - ☐ B. derived from the otic placode.
 - ☒ C. is filled with perilymph.
 - ☐ D. A and B are correct
 - ☒ E. A, B, and C are correct
4. The sensory neurons related to the membranous labyrinth are derived from
- ☒ A. alar plate of the neural tube.
 - ☒ B. otic vesicle.
 - ☐ C. neural crest.
 - ☐ D. A and B are correct
 - ☐ E. A, B, and C are correct
5. The cartilage of the second pharyngeal arch gives rise to the
- ☐ A. malleus
 - ☐ B. incus
 - ☒ C. stapes
 - ☐ D. A and B are correct
 - ☐ E. A, B, and C are correct

6. Failure of development of the cochlear portion of the membranous labyrinth or associated neurons would lead to

- A. loss of equilibrium (balance). ✓
B. a form of congenital deafness on the related side.
C. Both A and B are correct
D. Neither A nor B is correct

7. The bony labyrinth of the ear

- A. is a portion of the cartilaginous neurocranium.
B. is a portion of the temporal bone.
C. Both A and B are correct
D. Neither A nor B is correct

8. Failure of the optic fissure to close anteriorly will produce

- A. blindness in related eye.
B. a cleft iris. ←
C. congenital glaucoma
D. A and B are correct
E. A, B, and C are correct

9. Retinal detachment usually occurs in the space between the

- A. retina and choroid
B. the inner and outer layers of retina
C. photoreceptor cells and bipolar retinal cells
D. ganglion cells of retina and vitreous body

10. The optic lens is

- ✓A. derived from the same tissue that gives rise to the epithelium of the conjunctiva.
✓B. is originally vascularized by branches of the vessel that gives rise to the central retinal artery.
✗C. surrounded by epithelial cells that function to dehydrate the lens and thus maintain its transparency.
D. A and B are correct
E. A, B, and C are correct

11. The axons in the optic nerve originate in the

- A. retina and pass to the diencephalon.
B. diencephalon and pass to the retina.
C. retina and pass to the telencephalon.
D. A and B are correct
E. A, B, and C are correct

12. The choroid layer of the eye includes

- A. a system of arteries and veins *W/S*
- B. smooth muscle cells within ciliary body *-1*
- ~~C.~~ smooth muscle within the iris *myoepithelial? iris - from mesoderm*
- ☒ D. A and B are correct
- E. A, B, and C are correct



13. The last area to normally fuse during development of the palate is

- ~~A.~~ the junction between the medial nasal eminences and the lateral nasal eminences.
- ☒ B. the junction between the medial nasal eminences and the lateral palatine processes.
- C. the junction between the anterior portions of the lateral palatine processes.
- D. the junction between the posterior portions of the lateral palatine processes.



14. Which of the following is(are) derived from the mesenchyme in the lateral palatine processes?

- ✓ A. Majority of hard palate
- ✓ B. Soft palate
- C. Alveolar bone of maxilla—
- D. A and B are correct
- ☒ E. A, B, and C are correct

15. The homeobox genes (Hox genes)

- ☒ A. assist in the determination of segmentation patterns in the body.
- ☒ B. are often influenced by retinoic acid concentrations in the micro-environment surrounding the cells.
- C. have similar actions in many animal species.
- D. A and B are correct
- ☒ E. A, B, and C are correct

16. Which of the following is always interposed between maternal blood and fetal blood?

- A. Endothelial cells of maternal origin
- ~~B.~~ Cytotrophoblastic cells
- ☒ C. Syncytiotrophoblast
- D. A and B are correct
- E. A, B, and C are correct

17. A secondary placental villus will almost always
- ☒ A. contain fetal blood vessels.
 - ☐ B. extend from the maternal surface to the fetal surface of the placenta.
 - ☐ C. contain cytotrophoblastic cells.
 - ☐ D. A and B are correct
 - ☐ E. A, B, and C are correct
18. Cytotrophoblastic cells may come into contact with
- ☐ A. maternal lymphocytes in circulating blood.
 - ☐ B. uterine decidua (altered endometrium).
 - ☐ C. the ectoderm of the fetus.
 - ☒ D. A and B are correct
 - ☐ E. A, B, and C are correct
19. Amniotic fluid
- ☐ A. is normally ingested by the fetus
 - ☐ B. may be damaging to fetal skin if the fetus is not born at the correct time.
 - ☐ C. is necessary for vaginal parturition.
 - ☐ D. A and B are correct
 - ☐ E. A, B, and C are correct
20. The cleavage plane that develops at the time of delivery of the placenta is normally
- ☐ A. within the syncytiotrophoblast.
 - ☐ B. between the syncytiotrophoblast and the decidua basalis.
 - ☐ C. within the decidua basalis.
 - ☐ D. A and B are correct
 - ☐ E. A, B, and C are correct
21. Dizygotic twins will normally
- ☐ A. be within a common amniotic cavity.
 - ☐ B. be within a common chorionic cavity.
 - ☐ C. Both A and B are correct
 - ☒ D. Neither A nor B is correct
22. The chorionic (trophoblastic) tissues
- ☒ A. require that a fetus be present to function.
 - ☐ B. contain the same genetic information as the fetus
 - ☐ C. Both A and B are correct
 - ☐ D. Neither A nor B is correct

QUESTIONS 23 TO 27

- A. Achondroplasia
 B. Acromegaly - after ossification inhibited
 C. Both A and B are correct
 D. Neither A nor B is correct

→ normal limbs short long bones

23. Primary defect is related to growth of cartilage **A**
 24. Results in a small, proportionally correct individual **D**
 25. Results are evident in an adolescent individual **A**
 26. Produces abnormal long bones (bones of limbs) **A**
 27. Produces changes in bones formed entirely by intramembranous ossification **A not B D**

QUESTIONS 28 TO 47

- A. Ectoderm
 B. Mesoderm
 C. Endoderm
 D. Neural crest
 E. B and D



→ bi-cells
 → inner lining of BV - endo

USING THE CHOICES LISTED ABOVE, IDENTIFY THE TISSUE(S) OF ORIGIN FOR:

28. Cells forming biceps brachii muscle **B**
 29. Cells forming ulna **B**
 30. Cells forming muscle of radial artery **B**
 31. Cells forming inner lining of aorta (endothelium) **B**
 32. Cells forming articular cartilage of shoulder joint **B**
 33. Cells forming dermis of forearm **B**
 34. Cells forming enamel of tooth **A**
 35. Cells producing myelin sheaths in cervical and thoracic portions of vagus nerve **neural crest D**
 36. Cells that myelinate nerve processes in central nervous system **A from neuroectoderm**
 37. Cells producing natural pigmentation of hair **D**
 38. Epithelium of nasal cavity **A**
 39. Epithelium of larynx **C**
 40. Keratinizing cells of epidermis **A**
 41. Lingual epithelium related to filiform papillae **A**
 42. Sensory neurons innervating tooth and periodontal structures **D**
 43. Neurons with cell bodies in cerebral cortex system **A**
 44. Neurons with cell bodies within spinal cord - **motor/autonomic**
 45. Neurons with cell bodies in dorsal root ganglia **D**
 46. Neurons with cell bodies in autonomic ganglia of head **D**
 47. Neurons with cell bodies in sympathetic ganglia **D**

neuroepithel



QUESTIONS 48 TO 57 REFER TO FIGURE 1

ANSWER A IF STATEMENT IS TRUE
ANSWER B IF STATEMENT IS FALSE

48. Nerve cell bodies in "A" are derived from neural crest **F**
49. Nerve cell bodies in "A" are derived from the alar portion of mantle zone
50. Nerve cell bodies in "B" send processes to peripheral structures and serve as the "pathfinders"
51. Nerve cell bodies in "B" relate directly to autonomic ganglia
52. Nerve cell bodies in "C" send processes to the eye
53. Nerve cell bodies in "D" could be associated with the sensory portion of the trigeminal nerve **GSA (or GVA)**
54. Nerve cell bodies in "E" send processes into the glossopharyngeal and vagus nerves **SNA GVA**
55. Nerve cell bodies in "F" could send processes to the submandibular ganglion
56. Nerve cell bodies in "G" could provide motor innervation to the muscles of facial expression **SVE**
57. Nerve cell bodies in "H" could provide motor innervation to the muscles of mastication. **F**

S Olfactory
S Optic
M Somatosensory
M Motor
S Vestibular
B Vestibular
B Vagus
M Vagus
M Vagus

QUESTIONS 58 TO 69 REFER TO FIGURE 2

58. Structure 58

- A.** A portion of the epithelium will be innervated by branches of the trigeminal nerve. **A**
- B.** A portion of the epithelium will be innervated by branches of the facial nerve.
- C.** A portion of the epithelium will be innervated by the hypoglossal nerve.
- D.** A and B are correct
- E.** A, B, and C are correct.

59. Structure 59

- A.** The epithelium derived from this will be innervated by branches of the facial nerve.
- B.** The epithelium derived from this will be associated with the lingual tonsil.
- C.** The muscle most closely related to this will be innervated by the glossopharyngeal nerve **glossopharyngeal**
- D.** A and B are correct.
- E.** A, B, and C are correct.

$$\frac{x}{12} = .70$$

$$\begin{array}{r} 72 \\ .7 \\ \hline 50.4 \end{array}$$

50 right!
OK

60. Structure 60

- ☒ A. Tissue derived from the mesenchyme in this will be innervated by trigeminal nerve.
- ☒ B. Tissue derived from the mesenchyme in this will give rise to the mandible.
- ☒ C. Tissue derived from the mesenchyme in this will lie near to the path of migration of the thyroid gland.
- D. All of the above are correct. (A-C)
- E. None of the above are correct. (A-C)

61. Structure 61

- ☒ A. Lymphoid tissue will develop in this region. *lingual tonsil*
- ☒ B. The epithelium here is derived from ectoderm.
- ☒ C. Neural crest cells contribute to most of the functional secretory cells found in the organ that migrates from this region. *salivary gland*
- D. A and B are correct.
- ☒ E. A, B, and C are correct.

IV
VII
IX
X
X

salivary gland

62. Structure 62

- ☒ A. Mesenchymal cells in this will give rise to a portion of the hyoid bone.
- B. Epithelium related to this will be found in the oral pharynx.
- C. A portion of the common carotid artery forms in this.
- D. A and B are correct.
- ☒ E. A, B, and C are correct.

63. Structure 63

- ☒ A. Muscle tissue derived from this will be innervated by the glossopharyngeal nerve. *vagus*
- ☒ B. Muscle tissue derived from this will be found in the pharynx.
- ☒ C. The majority of muscle derived from this will be smooth muscle.
- D. A and B are correct.
- E. A, B, and C are correct.

64. Structure 64

- A. Mesenchymal tissue in this will contribute to the formation of the larynx.
- ☒ B. The recurrent laryngeal branch of the vagus nerve is the nerve most closely related to this.
- ☒ C. A portion of the pulmonary artery formed in this.
- D. A and B are correct.
- ☒ E. A, B, and C are correct.

65. Structure 65

- ☒ A. Cells developing in this region will contribute to the thyroid gland.
- ☒ B. Cells developing in this region will contribute to the inferior parathyroid gland. *C-Cells part of 4*
- C. Epithelium developing in this region will be innervated by the glossopharyngeal nerve.
- D. A and B are correct.
- E. A, B, and C are correct.

66. Structure 66

- ☒ A. Structures derived from this will be situated anterior to the sternocleidomastoid muscle.
- ☒ B. This normally becomes one of the depressions found in the auricle of the ear.
- ☒ C. Epithelium in this region will be of mesodermal origin.
- D. A and B are correct.
- E. A, B, and C are correct.

67. Structure 67

- A. An organ derived from this region contains cells of neural crest origin and of epithelial origin as well as lymphocytes.
- B. An organ derived from this is usually situated in the thorax. *true*
- C. An organ derived from this may be situated near the larynx. *thyroid*
- D. A and B are correct.
- ☒ E. A, B, and C are correct.

68. Structure 68

- A. This is closely associated with the palatine tonsil.
- B. If this is a pharyngeal membrane, it is the least likely to rupture.
- ☒ C. A congenital rupture of the tympanic membrane (ear drum) will result from prenatal rupture of this.
- D. A and B are correct.
- E. A, B, and C are correct.

69. Structure 69

- A. The epithelium in this region is of ectodermal origin.
- B. The majority of cells of the thyroid gland is derived from mesenchymal tissue originating in this region.
- ☒ C. This region is posterior to the oropharyngeal membrane (buccopharyngeal membrane).
- ☒ D. A and B are correct.
- E. A, B, and C are correct.

QUESTIONS 70 TO 72 REFER TO FIGURE 3

70. Region 70

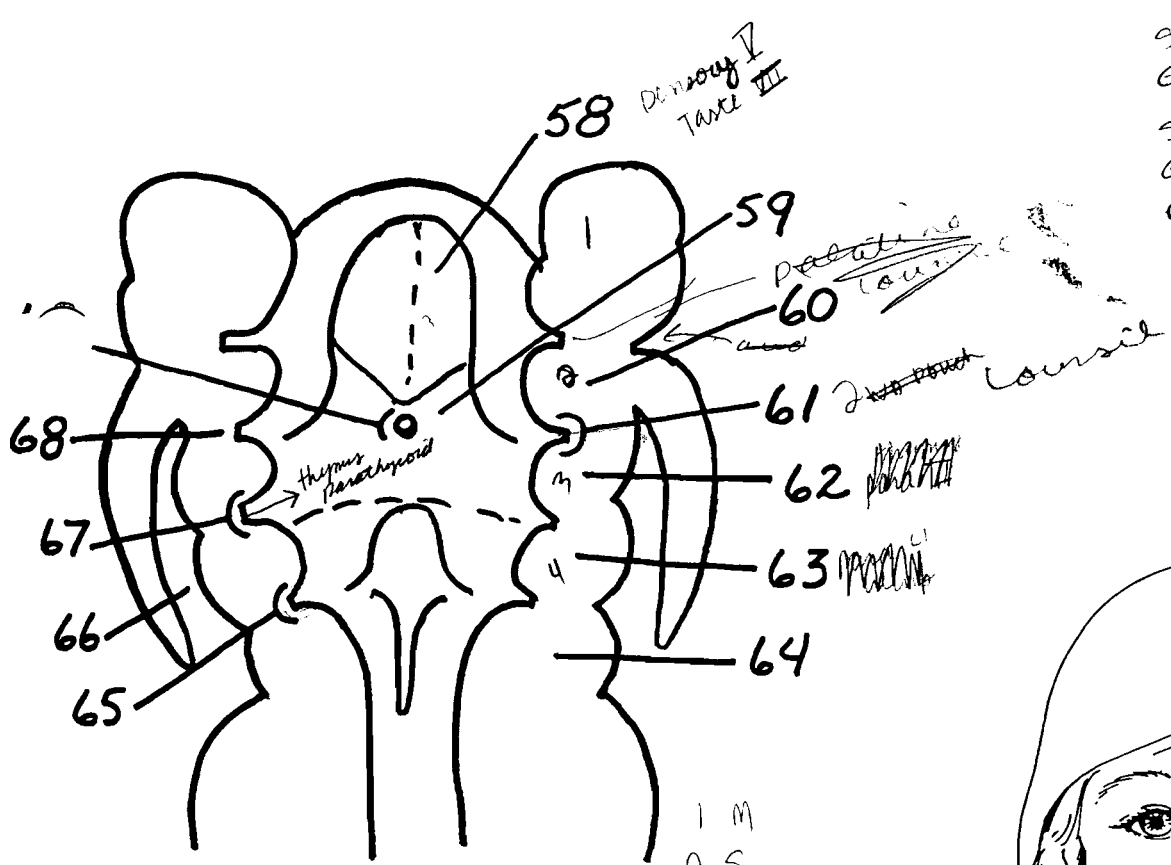
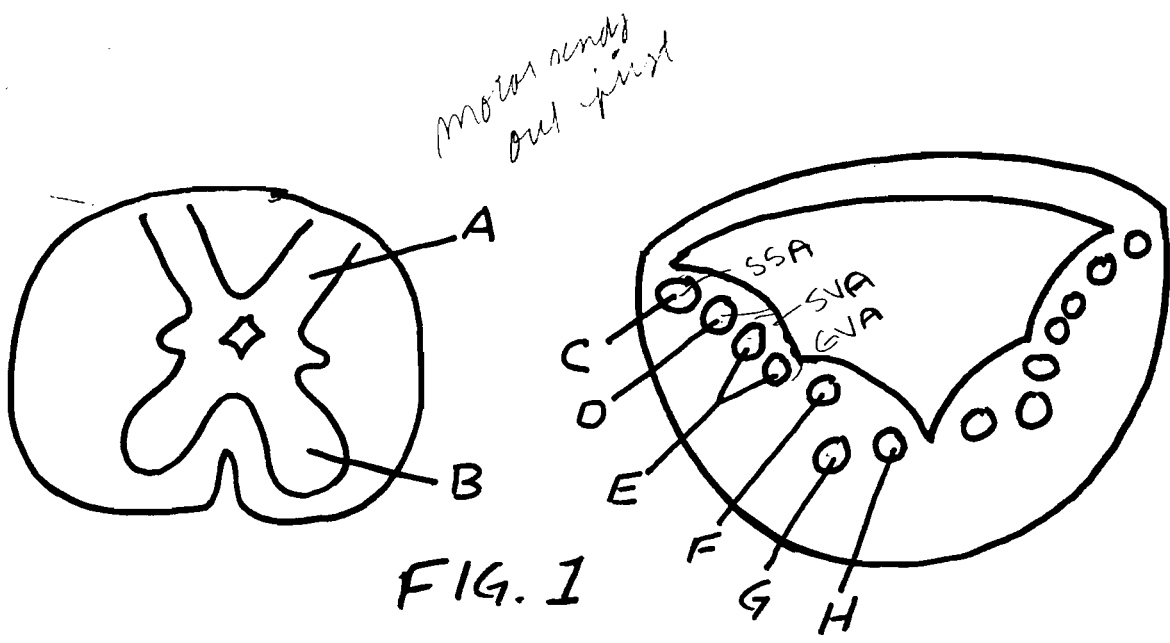
- ☒ A. This is formed by the medial nasal eminences.
This would usually be situated lateral to the cleft created by an anterior cleft lip-cleft palate.
- ☒ B. Skeletal muscle in the region is innervated by branches of the trigeminal nerve.
- D. A and B are correct
- E. A, B, and C are correct

71. Region 71

- ☒ A. This is derived from a portion of the first pharyngeal arch.
- B. The bone deep to this was formed primarily by means of endochondral ossification. *false*
- C. The epithelium of the sinus situated in this region is derived from endoderm.
- D. A and B are correct
- E. A, B, and C are correct

72. The drooping of the upper eyelid was present at birth. Movements of the eye are normal. Possible causes of the ptosis would include

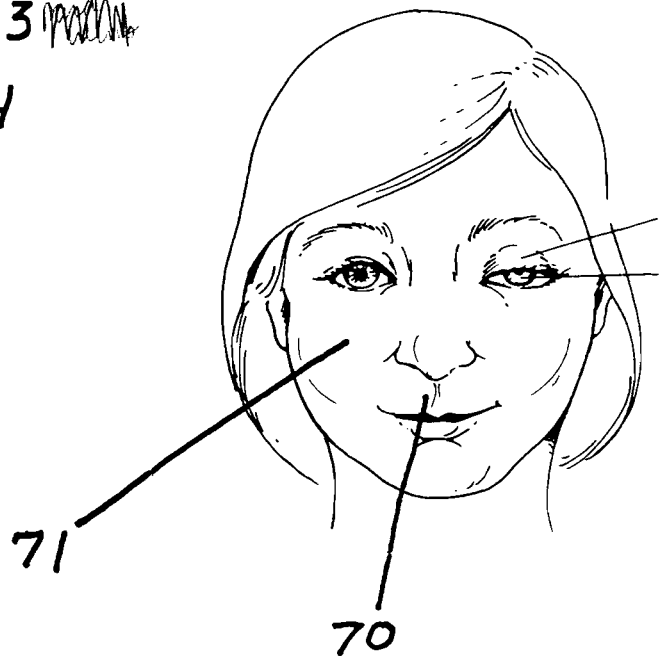
- A. abnormal development of the orbicularis oculi muscle.
- B. abnormal development of the levator palpebrae superioris muscle ~~✓~~
- C. abnormal development of the ophthalmic division of trigeminal nerve. ~~✓~~ *6 sensory*
- D. All of the above are correct (A-C)
- E. None of the above are correct (A-C)



S	S	A
E	S	A
S	V	A
B	V	A
E	V	E
S	V	E
G	S	E

320-hyoid IX

1 M
2 S
3 I
4 AS
6 P



Id #: 680508 Class: EMBRYOLOGY Course #: EMB978
Name: [REDACTED] Time:

Blindness *long 367 hands = feet* *check 1st row*
Test Key: EBBDCBCBBD | ADDDECCBDC | DBADACBBBB | BBBADADACA | ADAADDDBA |
Items 1-50: 1234567890 | 1234567890 | 1234567890 | 1234567890 | 1234567890 |
Student's Answers: **E**ADD** | **BE***D** | *****D*** | ***** | D**D***** |

Test Key: BBABAABDBC | AEBEAAEACA | AB | | |
Items 51-100: 1234567890 | 1234567890 | 1234567890 | 1234567890 | 1234567890 |
Student's Answers: *A*A***A** | EA*****CD* | ** | | |

13

EXAM 3 Form A
DISREGARD THESE CALCULATIONS

Possible Points: 72 69
Raw Score: 55 55
Objective Score: 55
Essay Score:
Percent Correct: ~~55%~~ 80%

Possible Points: 0
Raw Score: 0
Percent Correct: --
In-progress Grade:

QUESTIONS BONUSED = 4,18,54